User Manual

TPHD402P

PTN HDMI/IR/RS232 Twisted Pair POC Extender

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Version: TPHD402P2013V1.1

NOTICE: Please read this user manual carefully before using this product.

This manual is for operation instruction only, not for any maintenance usage. The functions described in this version are updated till May 2013. Any changes of functions and parameters since then will be informed separately. Please refer to the dealers for the latest details.

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All product function is valid till 2013-11-29.

Update History

Version	Date	Update Content
1.0	2013.05.29	First version.
1.1	2013.11.29	Changed product design

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1. Introduction

1.1 Introduction to TPHD402P

TPHD402P is an HDMI/IR/RS232 twisted pair including transmitter (TPHD402PT) and receiver (TPHD402PR). The TPHD402P uses HDBaseT technology to deliver HDMI signal, max transmission distance up to 70 meters with CAT5e/CAT6 cable. CEC, bi-directional RS232&IR control, and POC are supported by TPHD402P.

1.2 Features

- Support Full HD: Delivers high resolution image (1080p@60Hz@48 b/pixels/3D/4Kx2K).
- Max transmission distance is up to 70 meters over single CAT5e/CAT6 cable.
- High Bandwidth: 10.2Gps.
- HDTV Compatible, use HDMI 1.4 and HDCP compliant.
- Support POC & CEC.
- Connect with a displayer to transmit EDID and HPD signals constantly by using a CAT5e cable.
- Use HDBaseT technology.
- Bi-directional RS232/IR control.
- LED indicators show work status.
- Wall/table-mountable aluminium enclosure, PT case design.

Note: Please use a CAT5e cable with low impedance (Shielded twisted pair will be better and should be well grounded) for good transmission effect.

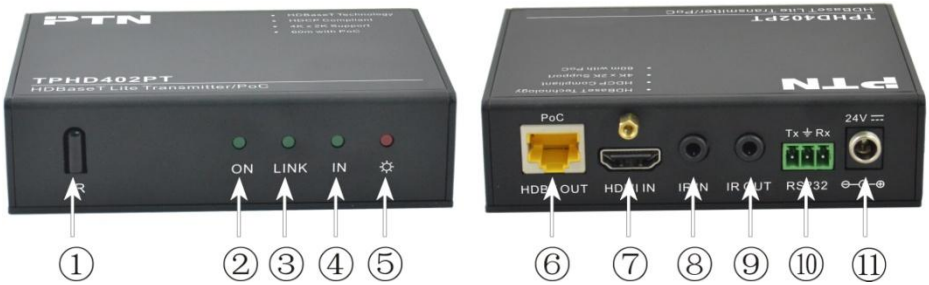
1.3 Package Contents

- 1 x TPHD402PT
- 1 x TPHD402PR
- 4 x Mounting ears (Separated from TPHD402P)
- 2 x RS232 cables
- 8 x Screws
- 2 x Power adapter (DC 5V)
- 1 x User manual

Notes: Please confirm if the product and the accessories are all included, if not, please contact with the dealers.

2. Introduction of Product Appearance

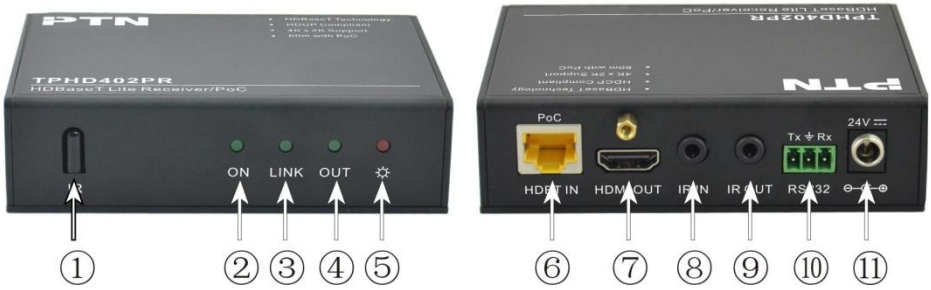
2.1 Appearance of TPHD402PT



1) IR: IR receiver.
2) ON: Working status indicator of this device. When the device works fine, this green LED will keep blinking. And it will get off when the device stops work.
3) LINK: Twisted Pair Link status indicator, green LED. It will keep on when connection is successful.
4) IN: When connected with devices support HDCP and work normally this LED will keep on. If devices not support HDCP, this green LED will blink.
5) POWER LED: LED indicator of power. When connect with power, red LED will keep on.
6) TP OUT: Single TP cable connects to TP IN port in TPHD402PR.
7) HDMI IN: Connect to HDMI source.
8) IR IN: Connect with IR receiver, the IR signal received from this port can only send out in TPHD402PR.

   NOTICE: When there is IR receiver connected to this port, the port (1) will be unavailable.
9) IR OUT: Connect with IR sender, the sending IR signal are received from TPHD402PR.
10) RS232: RS232 connector.
11) 24V DC: Connect with power supply (Not necessary if TPHD402PR connects with power).

2.2 Appearance of TPHD402PR



1) IR: IR receiver.
2) ON: Working status indicator of this device. When the device works fine, this green LED will keep blinking. And it will get off when the device stops work.
3) LINK: Twisted Pair Link status indicator, green LED. It will keep on when connection is successful.
4) OUT: When connected with devices support HDCP and work normally this LED will keep on. If devices not support HDCP, this green LED will blink.
5) POWER LED: When connect with power, red LED will keep on.
6) TP IN: Single TP cable connects to TP OUT port in TPHD402PT.
7) HDMI IN: Connect to HDMI display device.
8) IR IN: Connect with IR receiver, the IR signal received from this port can only send out in TPHD402PT.

   NOTICE: When there is IR receiver connected to this port, the port (1) will be unavailable.
9) IR OUT: Connect with IR emitter, the sending IR signal are received from TPHD402PT.
10) RS232: RS232 connector.
11) 24V DC: Connect with power supply (Not necessary if TPHD402PT connects with power).

3. System Connection

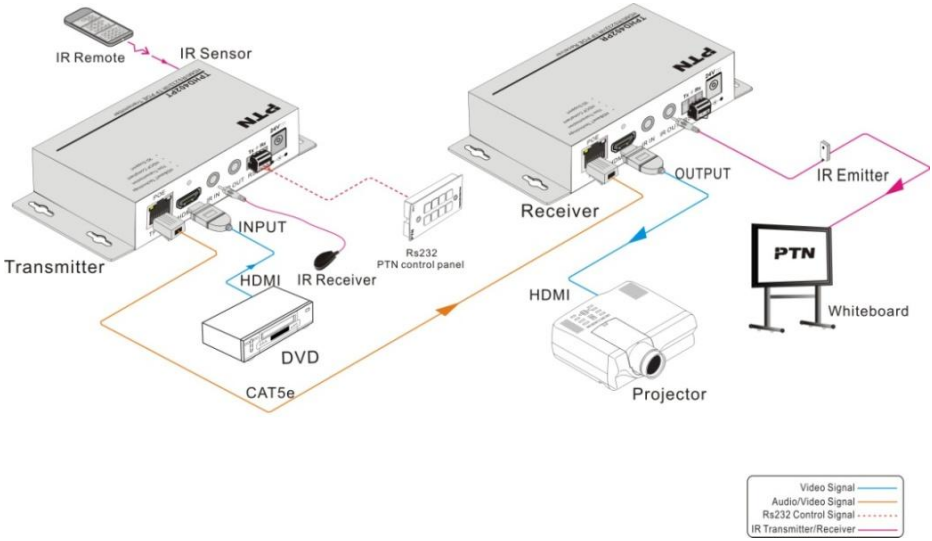
3.1 Usage Precautions

1) System should be installed in a clean environment and has a prop temperature and humidity.

2) All of the power switches, plugs, sockets and power cords should be insulated and safety.

3) All devices should be connected before power on.

3.2 System Diagram



3.3 Connection Procedure

Step1. Connect HDMI source (such as Blue-ray DVD) to HDMI IN port of transmitter TPHD402PT with HDMI cable.

Step2. Connect TP OUT port of TPHD402PT and TP IN port of TPHD402PR, with single CAT5e/CAT6 cable.

Step3. Connect HDMI displayer (such as HDTV) to HDMI OUT port of TPHD402PR with HDMI cable.

Step4. Both TPHD402PT and TPHD402PR have IR IN and OUT. When one model use for IR signal receiver, the IR signal must be sent out by the other model.
For example: When “IR IN” of TPHD402PT connects with an IR receiver, the IR sender must connect to IR OUT of TPHD402PR.

Step5. Connect the RS232 port of the devices to be controlled and the receiver or the transmitter.

Step6. Connect with DC24V power adaptor(s) (One is enough if any end of TPHD402PT and TPHD402PR is connected with adapter as its POC function).

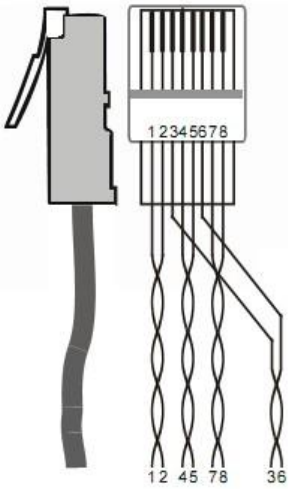
3.4 Application

TPHD402P has a good application in various occasions, such as computer realm, monitoring, big screen displaying, meeting room, education and bank & securities institution etc.

3.5 Twisted Pair Cable Connection

The twisted pair used in this extender MUST be a straight-through cable.

TIA/EIA T568A			TIA/EIA T568B	
Pin	Cable color		Pin	Cable color
1	green white		1	orange white
2	green		2	orange
3	orange white		3	green white
4	blue		4	blue
5	blue white		5	blue white
6	orange		6	green
7	brown white		7	brown white
8	brown		8	brown
1st Ground	4--5		1st Ground	4--5
2nd Ground	3--6		2nd Ground	1--2
3rd Group	1--2		3rd Group	3--6
4th Group	7--8		4th Group	7--8



Notice: Cable connectors MUST be metal one, the shielded layer of cable MUST be connected to the connector's metal shell, to make a better transmission.

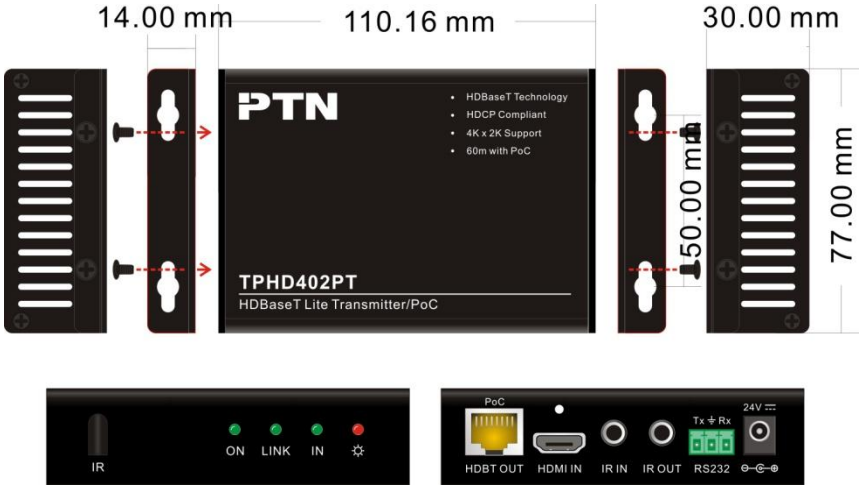
4. Specification

Model / Spec	TPHD402PT	TPHD402PR
Input		
Input Signal	1 HDMI,1 IR & 1 RS232	1 IR, 1 RJ-45 & 1 RS232
Input Connector	HDMI female, 3.5mm mini jack, 3p captive screw connector	3.5mm mini jack, RJ-45, 3p captive screw connector
Video Signal	HDMI1.4	HDMI1.4
Audio	Digital audio, transmit through HDMI audio	Digital audio, transmit through HDMI audio
Output		
Output	1 RJ-45, 1 IR, 1 RS232	1 HDMI, 1 IR, 1RS232
Output Connector	RJ-45, 3.5mm mini jack, 3p captive screw connector	HDMI female, 3.5mm mini jack, 3p captive screw connector
Video signal	HDMI1.4	HDMI1.4
Transmission Mode	HD Base T	
General		
Resolution Range	800x600 ~ 1920x1200	
Transmission Distance	Max distance 70M	
Gain	0dB ~ 10dB@100MHz	
Differential Phase Error	±10° @ 135MHz_100M	
SNR	>70dB@ 100MHz-100M	
Bandwidth	10.2Gbps	
Return Lost	＜-30dB@5KHz	
THD	＜0.005%@1KHz	
HDMI Standard	Support HDMI1.4 and HDCP	
Min. ～Max. Level	＜0.3V ~ 1.45Vp-p	
Impedance	75Ω	
Temperature	-20 ~ +70℃	
Humidity	10% ~ 90%	
Power Supply	Input: 100VAC~240VAC, 50/60Hz Output: DC 24V, 1.25A	
Power Consumption	9.6W	
Case Dimension	W110.16xH28x D77 mm	W113.03xH28x D77 mm
Net Weight	0.5Kg	0.5Kg

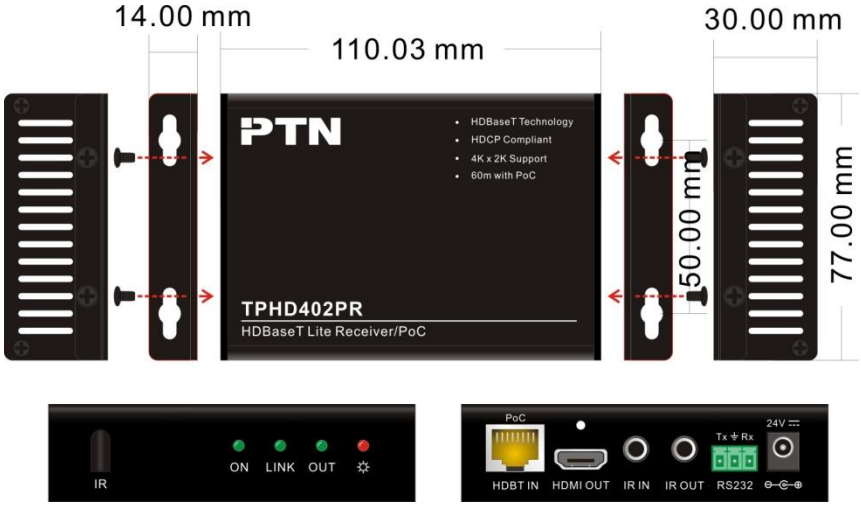
NOTE: All nominal levels are at ±10%.

5. Panel Drawing

TPHD402PT



TPHD402PR



6. Troubleshooting & Maintenance

1) When images of terminal unit output with ghost, such as the projector output with ghost. Generally this is not a unit faulty, this may be caused by an incorrect setting on the projector or a bad quality of cable. Please check the projector's setting or try another high quality connection cable.

2) When there is a color losing or no video signal output, please check the input and output end connections of the cables.

3) When user cannot control the extender by computer through its COM port, please check the COM port number in the software and make sure the COM port is in good condition.

4) When switching, there is no output image:

- Check with oscilloscope or multimeter if there is any signal at the input end. If there is no signal input, it may be the input connection cord broken or the connectors loosen.
- Check with oscilloscope or multimeter if there is any signal at the output end. If there is no signal output, it may be the output connection cord broken or the connectors loosen.
- If it is still the same after the above checking, maybe there is something wrong in the extender. Please send it to the dealer for fixing.

5) If the static becomes stronger when connecting the video connectors, it probably due to bad grounding, please check the grounding and make sure it connected well, otherwise it would damage the extender.

7. Safety Operation Guide

In order to guarantee the reliable operation of the equipments and safety of the staff, please abide by the following proceeding in installation, using and maintenance:

1) The system must be earthed properly. Do not use two blades plugs and ensure the alternating power supply ranged from 100v to 240v and from 50Hz to 60Hz.

2) Do not put the device in a place of too hot or too cold.

3) As the power generating heat when running, the working environment should be maintained fine ventilation, in case of damage caused by overheat.

4) Cut off the general power switch in humid weather or left unused for long time.

5) Before following operation, ensure that the alternating current wire is pull out of the power supply:

- Take off or reship any components of the equipment.
- Take off or rejoin any pin or other link of the equipment.

6) As to non-professional or without permission, please DO NOT try to open the casing of the equipment, DO NOT repair it on your own, in case of accident or increasing the damage of the equipment.

7) DO NOT splash any chemistry substance or liquid in the equipment or around.

8. After-sales Service

1) If there appear some problems when running TPHD402P, please check and deal with the problems reference to this user manual. Any transport costs are borne by the users during the warranty.

2) You can email to our after-sales department or make a call, please tell us the following information about your cases.

- Product version and name.
- Detailed failure situations.
- The formation of the cases.

3) We offer products for all three-year warranty, which starts from the first day you buy this product (The purchase invoice shall prevail).

4) Any problem is same with one of the following cases listed, we will not offer warranty service but offer for charge.

- Beyond the warranty.
- Damage due to incorrectly usage, keeping or repairing.
- Damage due to device assembly operations by the maintenance company non-assigned.
- No certificate or invoice as the proof of warranty.
- The product model showed on the warranty card does not match with the model of the product for repairing or had been altered.
- Damage caused by force majeure.

5) This document is just a user manual released with the product, not a quality guarantee. Any corrections or new function introductions added, we will update this document without further notice.

Remarks: For any questions or problems, please try to get help from your local distributor, or email PTN at: support@PTN-electronics.com.

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